Canopy Demand Report Analysis and Market Modeling 2025 Report

Maryland Cannabis Administration
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Executive Summary

This report provides a data-driven assessment of cultivation capacity, supply-chain dynamics, and consumer demand in Maryland's adult-use cannabis market following adult-use legalization. Using a combination of licensed canopy data, state track-and-trace records, and validated consumer survey data, the analysis evaluates whether current market conditions suggest constraints on supply, excess production, or movement toward equilibrium.

Across all analyses, the findings indicate that Maryland's cannabis market is not currently constrained by licensed cultivation canopy. Observed flowering canopy declined following the transition to adult-use sales, while the maximum permitted canopy within existing licenses continued to expand. This divergence suggests that cultivation levels are being shaped primarily by market forces, such as price compression, inventory risk, and demand expectations, rather than by regulatory limits on production capacity.

To assess supply and demand across the full supply chain, cultivation, transfers, and retail sales were standardized into equivalent milligrams of THC. This approach allows direct comparison of production, processing, and consumption using a single, consumer-relevant unit. The analysis, which contains assumptions and elements of traceability deficits, shows that total THC cultivated substantially exceeds THC dispensed through retail sales. Even under conservative assumptions that inflate demand for processed products, estimated demand remains well below the total cultivated supply. However, trends over time indicate that the gap between supply and demand is narrowing as producers increasingly redirect raw flower into processed products and retail sales continue to grow.

Consumer survey data further contextualize these findings by demonstrating that approximately three-quarters of cannabis spending among Maryland residents occurs through licensed retail channels. Illicit, gray, and alternative markets, including homegrow, purchases from friends and family, out-of-state sources, and hemp-derived cannabinoids, account for a smaller, supplemental share of demand rather than serving as primary substitutes for the regulated market. Medical cannabis patients remain an important consumer segment, with higher overall spending and broader product utilization than non-patient adult-use consumers.

Taken together, these results suggest that Maryland's cannabis market is undergoing a gradual adjustment toward balance with high demand capture. Current production capacity appears sufficient to meet observed demand, and market participants are slowly adapting to consumer preferences through product diversification and supply reallocation. At this stage, the evidence does not indicate a need to expand licensed canopy limits. Instead, continued monitoring, improved data infrastructure, and policies that support competition and efficiency *across* the supply chain are likely to be more effective in promoting long-term market stability where prices can continue to drop and attract an even larger share of consumers.

I. Study Overview and Research Design

This research was conducted by Cannabis Public Policy Consulting (CPPC) on behalf of the Maryland Cannabis Administration (MCA) to assess current cannabis production capacity and market dynamics following the implementation of adult-use cannabis sales. This research was procured under Procurement I.D. BPM052449, titled “Canopy Demand Report Analysis and Market Modeling.” This initial report presents findings from an analysis of available cultivation canopy and observed sales activity using Maryland’s track-and-trace data system, alongside an initial supply and demand assessment.

The purpose of this report is to provide the Maryland Cannabis Administration (MCA) with a clear, data-driven assessment of current market conditions, with a focus on how licensed cultivation canopy is translating into actual supply at the retail level. This initial report presents a descriptive analysis of market demand and production capacity, including estimates of total annual cannabis demand and the share of that demand currently captured by the regulated market. Specifically, this report includes an assessment of demand by source, as well as an estimate of total annual market demand and the proportion of adult-use consumer demand captured through regulated sales. In addition, the report examines cultivation capacity through a time-series analysis of licensed canopy square footage since the implementation of adult-use sales.

The findings in this report are intended to support regulatory oversight and provide an empirical foundation for subsequent forecasting, predictive analytics, and policy scenario modeling, which will be delivered in an updated report in January. Additionally, the Administration, in partnership with Cannabis Public Policy Consulting (CPPC), intends to submit a supplementary report to the General Assembly by the end of January 2026 to include additional predictive modeling and market research analysis.

Objectives

The objectives of this initial phase of the report are to:

- Quantify available licensed cultivation canopy in Maryland and examine trends since the implementation of adult-use sales.
- Estimate total annual cannabis demand and assess demand by source, including the share of adult-use consumer demand currently captured by the regulated market.
- Evaluate supply and demand trends and evolving cannabis market dynamics in Maryland to inform an assessment of whether current conditions suggest a potential need for adjustments to licensed canopy limits.

Methodology and Survey Recruitment

The following analyses were conducted using a combination of CPPC-issued survey data and administrative market data provided by MCA. These data were analyzed by CPPC’s multidisciplinary research team, leveraging their expertise in economics, behavioral science, public health, and public policy. The findings presented in this report reflect observed market conditions and early indicators only and are intended to inform regulatory oversight rather than provide specific policy recommendations at this stage.

Regulatory Determinants of Cannabis Outcomes Survey (RDCOS)

CPPC administers the Regulatory Determinants of Cannabis Outcomes Survey (RDCOS), one of the largest and most frequently issued cannabis surveys in the United States. The RDCOS uses applied behavioral science methodologies and proprietary survey logic to quantify consumer behavior and evaluate the impacts of cannabis policies across more than 200 market, public health, and economic outcomes.

The RDCOS is designed to:

- Use a behavioral science approach to understand cannabis consumption behaviors and patterns
- Evaluate the efficacy of individual regulatory policies
- Identify and tailor key performance indicators for state-specific markets
- Measure outcomes at the local, state, and national levels for benchmarking, trend analysis, and prediction.

For this project, CPPC collaborated with the Maryland Cannabis Administration to tailor the standard RDCOS instrument to reflect Maryland's regulatory framework, market structure, and research objectives. Data was collected in November 2025 and captured 533 respondents. Data collected from the RDCOS serves as the analytical backbone for the supply and demand assessment and will be integrated with administrative market data to support forthcoming predictive modeling and market forecasting in the subsequent phase of this research.

The RDCOS, along with its tailored versions for specific populations of interest, is hosted on Qualtrics, a secure online survey platform with advanced logic features that support data validity and accuracy. The RDCOS has been reviewed and determined exempt by the BRANY Institutional Review Board (IRB). BRANY is registered in accordance with 45 C.F.R. § 46 Subpart E; and 21 C.F.R. § 56.106 (Registration #IRB00000080 and #IRB00010793).

Survey recruitment is conducted through Cint's Lucid Community Research Panels, a widely used and reputable recruitment platform that facilitates large-scale, diverse, and rapid sample collection through incentivized participation. Recruitment methods are designed to approximate representative population frames and ensure timely response rates. Data cleaning procedures are applied post-hoc, along with iterative proportional fitting (i.e., raking) using federal probability-based sample data to ensure representation of past-month cannabis users in the state.

All surveys are administered through Qualtrics, allowing CPPC to maintain respondent anonymity and comply with IRB requirements and National Institute of Standards and Technology (NIST) data security standards. Cint staff receive only a secure survey link and do not have access to respondent data. Because survey instruments may include questions related to sensitive behaviors, CPPC adheres to strict confidentiality, data security, and data management protocols. All staff involved in data analysis maintain current certifications in human subjects research and confidentiality through the U.S. Department of Health and Human Services.

Canopy Data Examination

To assess cultivation capacity and how it has evolved since the implementation of adult-use cannabis sales, CPPC analyzed aggregated canopy data provided by MCA for calendar years 2023 through 2025. These data are collected annually through a self-reported licensing inquiry and are maintained separately from the state's track-and-trace system. CPPC conducted data cleaning and validation prior to analysis to address incomplete entries, qualitative annotations, ambiguous variable definitions, and frequent "N/A" responses. Because each year's data represents a snapshot in time rather than continuous measurement, findings should be interpreted as indicative of broader market trends rather than precise point estimates.

The analysis examined current cannabis plant square footage, segmented by indoor and outdoor cultivation, as well as the maximum flowering square footage permitted within the existing licensed footprint. Time-series analysis of these variables was used to evaluate trends in canopy utilization and to assess whether observed production levels appear constrained by regulatory limits or by market dynamics.

Supply and Demand Analysis

CPPC analyzed MCA-provided track-and-trace data beginning from the start of adult-use cannabis sales through

the most recent data available at the time of analysis. These data capture cultivation, processing, and retail dispensing activity across the regulated supply chain, with segmentation between medical and adult-use markets where available. Track-and-trace data were used to assess production and sales patterns, quantify demand by product category, and evaluate how licensed cultivation capacity translates into retail supply. This analysis includes estimates of total annual cannabis demand, demand by source, and the share of demand currently captured by regulated sales.

To complement and contextualize administrative sales data, CPPC integrated findings from the RDCOS, which serves as the primary source for quantifying consumer demand by product type and source, including regulated adult-use, medical, illicit, and hemp-derived markets. RDCOS data provides critical insight into purchasing behaviors, expenditures, and willingness-to-pay that are not observable through track-and-trace systems alone. Together, RDCOS and track-and-trace data are triangulated to estimate total annual cannabis demand, assess the share of demand captured by the regulated market, and identify potential gaps between observed supply and underlying consumer demand. This integrated approach forms the analytical foundation for both the current supply and demand assessment and forthcoming predictive modeling and market forecasting.

Multiple Views to Gain a Macro Perspective

This report applies three complementary analytical approaches to develop a comprehensive understanding of current conditions in Maryland's cannabis market. First, canopy utilization data are examined to assess how licensed cultivators are deploying their permitted canopy over time. Although canopy data are inherently imperfect and limited to discrete time points, they provide useful insight into how operators are adjusting production within regulatory constraints, offering an early signal of behavioral responses to market conditions and policy design. However, it does not tell a complete story about how the market is reacting down the supply chain after point of harvest.

Second, supply-chain data from the state's track-and-trace system are analyzed by converting cultivation, transfers, and retail sales into a standardized measure of equivalent THC. This approach allows a fluid and multi-stage supply chain to be evaluated using a single, consumer-relevant unit, enabling comparison between what is being produced, what is being transformed into retail products, and what is ultimately dispensed. These estimates shed light on the evolving relationship between supply and demand and whether the market is moving toward equilibrium.

Finally, because track-and-trace data capture only activity within the regulated market, this report incorporates validated survey data from Maryland residents to assess the extent to which consumer demand may be met through non-traceable channels. Together, these three analyses provide a holistic view of market behavior. This integrated framework allows microeconomic theory to be applied in a grounded way to interpret production decisions, demand allocation, and broader market adjustment over time.

II. Canopy Data Examination

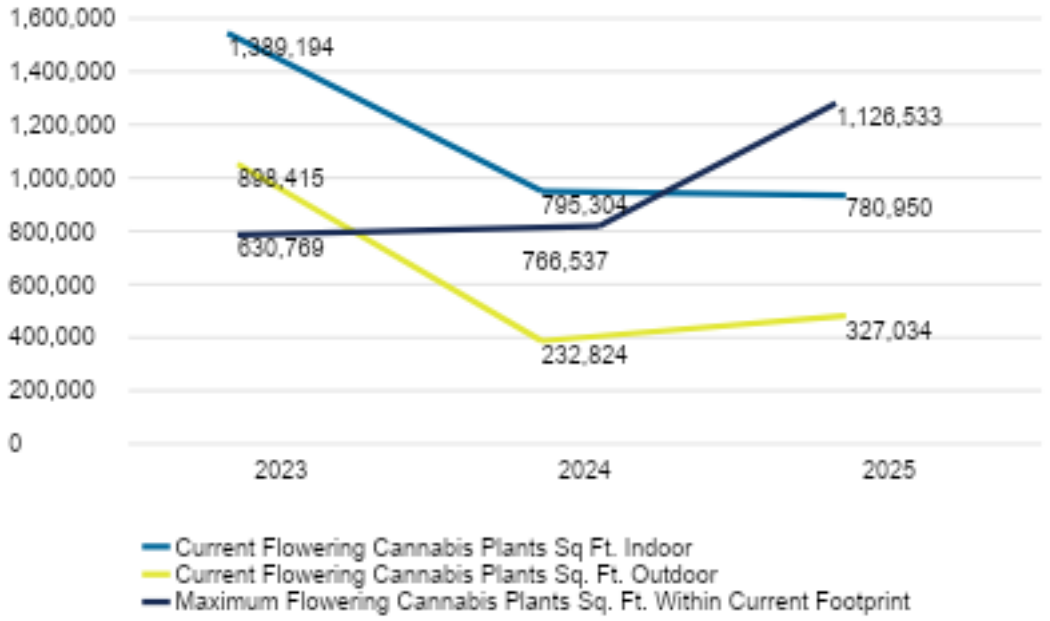
To better understand the capacity of the market within the current licensing infrastructure and how it may have grown since the implementation of adult-use implementation, CPPC analyzed aggregated canopy data from 2023 to 2025. Data was provided by the MCA's team, which collects this data in an annual capacity. The data is collected through a self-reporting inquiry separate from both the track-and-trace data and the licensing system. Given this process for data collection, the data for each year was found to be incomplete, highly noted with qualitative information, and required extensive cleaning. This data should be approached *carefully,* given these limitations of self-report with ambiguous variables for data input, consistent "N/A" response types, and a snapshot in time reflecting the data at the point of collection.

The three variables examined were:

- *Current Flowering Cannabis Plants Sq. Ft. Indoor*
- *Current Flowering Cannabis Plants Sq. Ft. Outdoor*
- *Maximum Flowering Cannabis Plants Sq. Ft. Within Current Footprint*

While no definition or interpretation was provided to CPPC nor the licensees filling out the report, we understand that the Indoor and Outdoor canopy reflect observed, active flowering square footage at the point of data collection for indoor and outdoor facilities. We assume that these data suggest what operators are growing "currently" for each year, which is heavily influenced by prices, margins, labor, capital constraints, and risk. The trends of these data points will provide insight into how the market may be behaving at a high level. *The Maximum Flowering Cannabis Plants Sq. Ft. Within Current Footprint* tells a different story, as we believe it is largely independent of current prices or demand, but rather a function of policy and acts as a theoretical upper bound. In other words, observed flowering canopy shows how operators are responding to economic conditions in real time, whereas maximum flowering canopy represents the defined ceiling on production capacity, independent of current market behavior.

Figure 1. Maryland Cannabis Canopy Growth (2023-2025)



As seen in Figure 1, from 2023 to 2024, there is a sharp contraction of the current flowering cannabis canopy being grown by both indoor and outdoor growers. Indoor production appears to have pulled back materially following the launch of adult-use sales, likely in response to the ushering in of the new market (i.e., price compression or cost pressure). At the same time, the maximum flowering canopy permitted within the existing licensed footprint increased steadily year over year, indicating that Maryland's overall regulatory capacity for cannabis production continued to expand even as actual cultivation declined.

In 2024, there is a convergence point between maximum flowering cannabis plants and the indoor canopy. This suggests that operators briefly aligned production with perceived demand. Shortly thereafter, licensed capacity continued to expand, creating additional headroom between what the market could produce under current regulations and what producers were choosing to grow. This pattern suggests that recent changes in cultivation levels are driven more by market conditions than by regulatory limits on canopy.

Based on the trends, which are reflective of data from a single point in time, Maryland's cannabis market does not appear to be constrained by the cultivation canopy permitted under state regulations. As shown in the figure above, observed indoor and outdoor flowering canopy declined substantially following the adult-use transition, likely reflecting producers' economic responses to price compression, margin pressure, and inventory risk. Over the same period, the maximum flowering square footage permitted within the existing licensed footprint increased steadily, expanding the market's theoretical production capacity even as active utilization fell. This gap between allowed capacity and actual production suggests that current supply levels are driven more by demand-side conditions and operator decisions than by regulatory canopy restrictions. As a result, Maryland's current regulatory framework appears to provide sufficient flexibility to meet near-term market demand without an immediate need to expand licensed canopy.

This analysis should be interpreted alongside other market indicators noted in this report. Cultivation canopy metrics represent only one component of a comprehensive market assessment and must be considered in conjunction with demand, pricing, and supply-chain dynamics. Taken together, all indicators underscore the importance of evaluating canopy availability within a broader market context rather than as a standalone determinant of market adequacy or stability.

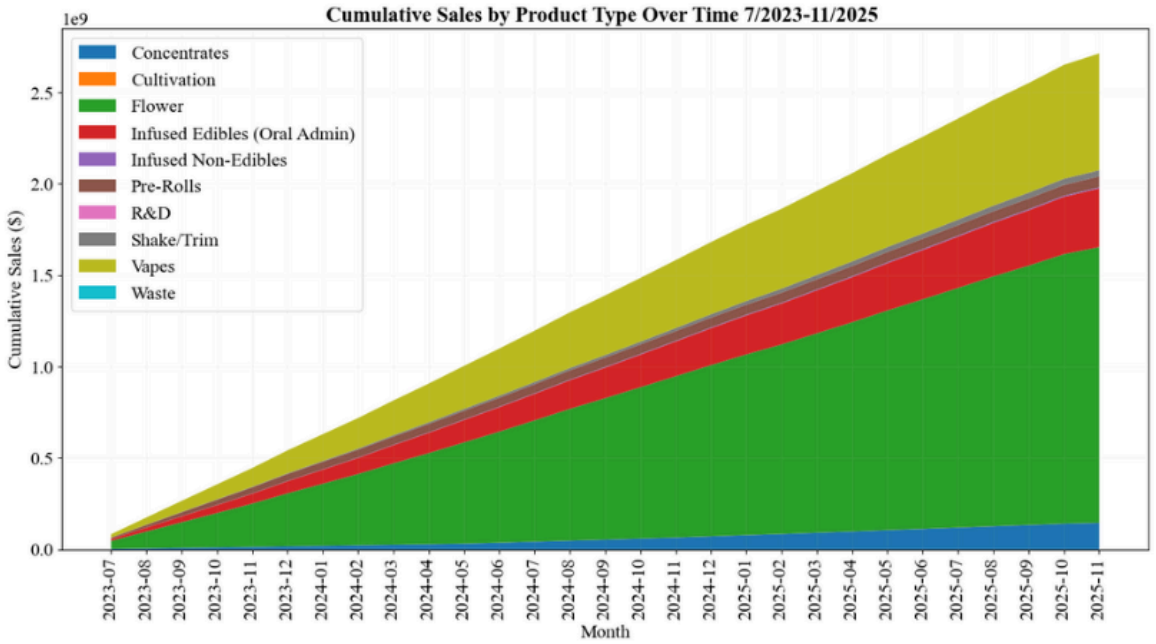
III. Cannabis Supply Chain Analysis

CPPC obtained cannabis supply chain data derived from the track-and-trace system for each month starting in July 2023 to November 2025. The following graphs depict the plotting of this data to illustrate trends and other market indicators that may suggest how the market is behaving, and whether there would be added value in the addition of canopy.

Cumulative Sales by Product Type

As shown in Figure 2, cumulative cannabis sales in Maryland have increased steadily since the transition to adult-use sales, reflecting sustained growth in consumer participation in the regulated market. Flower and vapes account for the largest share of total sales over time, followed by infused edibles and concentrates, indicating a diversified product mix with meaningful demand beyond traditional flower products. The continued expansion of cumulative sales across multiple product categories suggests not only strong overall demand but also increasing consumer preference for products that require additional processing, manufacturing inputs, and supply-chain coordination. These trends point to a developing market in which growth is driven both by volume and by product complexity, with implications for cultivation utilization, processing capacity, and overall supply-chain efficiency.

Figure 2. Cumulative Sales by Product Type Over Time, (July 2023 - November 2025)



Source: MCA Sales Data; Analysis by CPPC

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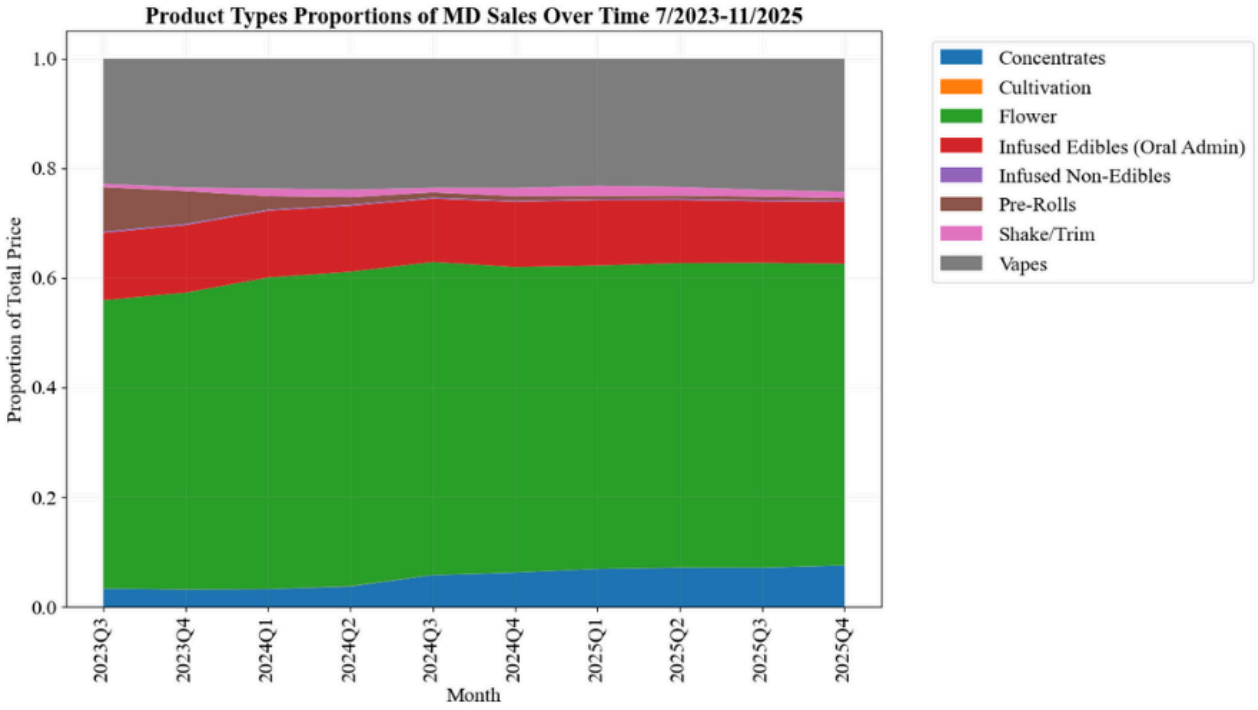
Cumulative sales by product type further contextualize Maryland's cultivation capacity and pricing dynamics. Since the adult-use transition, total cannabis sales from July 2023 to November 2025 have exceeded $2.7 billion, with flower accounting for approximately $1.51 billion (over half of total revenue), followed by vapes at $639 million and infused edibles at $321 million. This concentration of demand in flower-dominant and inhalable categories underscores the importance of cultivation inputs, but also highlights the role of downstream processing, manufacturing, and product differentiation in shaping market outcomes. Table 1 and Figure 3 below depict this information as a proportion of the total price per product type.

Table 1. Cumulative Cannabis Sales (Rounded by Product Type, (July 2023 - November 2025)

Product Type	Cumulative Sales
Concentrates	$146,108,716
Cultivation (i.e., seed, seedlings, immature plants)	$558,454
Flower	$1,507,986,064
Infused Edibles	$321,106,233
Infused Non-Edibles	$5,927,919
Pre-Rolls	$59,516,922
Shake/Trim	$34,061,772
Vapes	$638,999,421
Sales Total	**$2,714,265,500**

Figure 3. Product Types Proportions of MD Sales Over Time, (July 2023 - November 2025)



Source: MCA Sales Data; Analysis by CPPC

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Supply – Milligrams of THC Cultivated

The purpose of this analysis was to construct a supply–demand model of the cannabis supply chain, beginning at cultivation and ending with retail sales at the dispensary level. To enable a standardized comparison across stages of the supply chain, all quantities were converted into equivalent THC milligrams, calculated as:

Product weight (in milligrams) × total THC percentage by weight

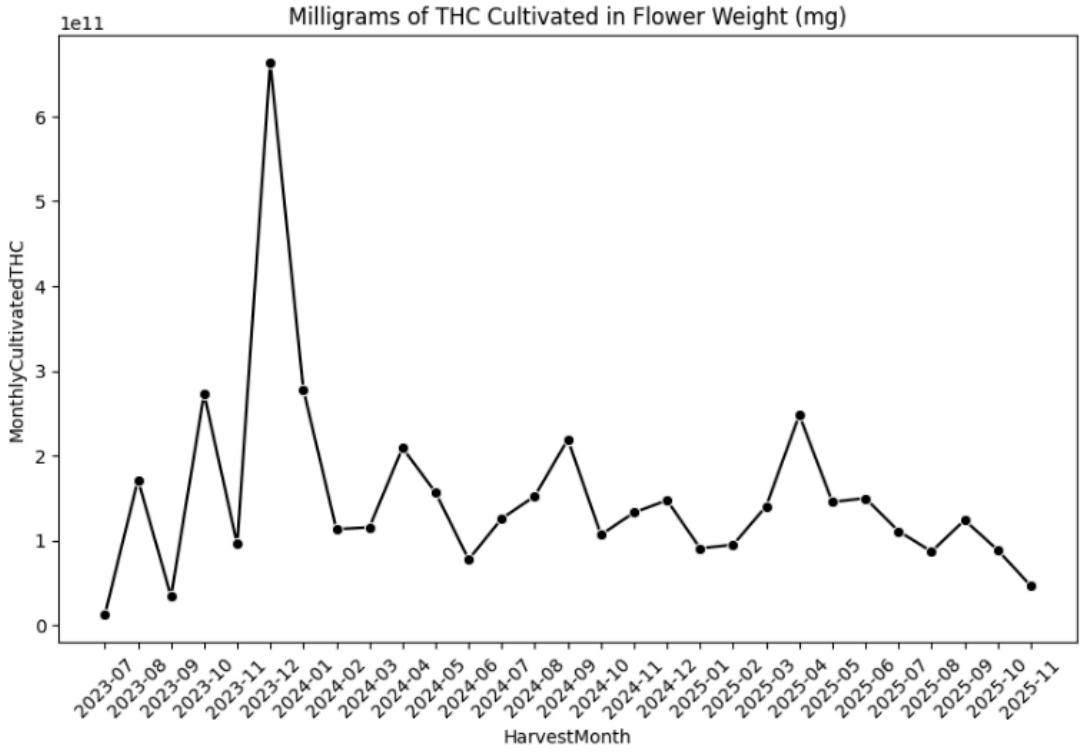
This metric represents the amount of THC contained in packaged flower and allows supply and demand to be evaluated using a common unit tied directly to consumer value. Although raw flower may be processed into other product forms (e.g., concentrates or vapes), economic incentives encourage producers to preserve as much THC as possible through these transformations, as consumer purchasing behavior is largely driven by THC content. All harvested material in the underlying cultivation data consisted of raw flower.

Cultivation and harvest data included unique harvest identifiers linked to laboratory potency results. This enabled a direct estimate of total THC entering the supply chain at the cultivation stage, which is reflected in Figure 4.

As shown in Figure 4, milligrams of THC cultivated in flower weight exhibited notable volatility immediately following the launch of adult-use sales, including a pronounced spike in late 2023. This early fluctuation likely reflects transitional dynamics as producers adjusted harvest timing, inventory strategies, and

production levels in response to the new adult-use market. Following this initial period, cultivated THC volumes decline and then stabilize, suggesting a market adjustment toward more measured production and responsiveness to consumer demand and pricing competition.

Figure 4. Milligrams of THC Cultivated in Flower Weight (July 2023 - November 2025)



Source: MCA Sales Data; Analysis by CPPC

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Supply – Milligrams of THC Processed

Sales data were also available and included product type (e.g., flower, edibles, pre-rolls) and package identifiers, but did not include potency information. Separately, laboratory testing data contained THC potency results along with product type and package identifiers. The original analytical objective was to link (or “crosswalk”) sales data with potency data at the package level in order to estimate THC dispensed across all product categories.

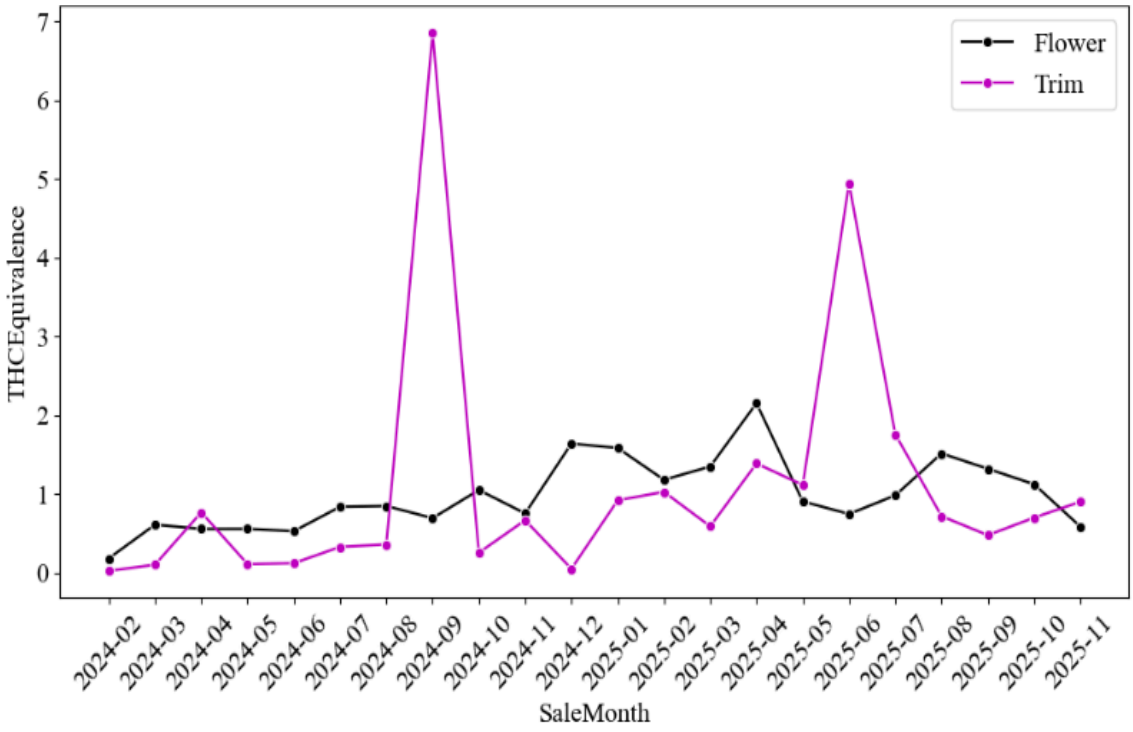
This linkage was successful for flower products, where more than 99% of sold packages could be matched to potency test results. However, for processed products such as concentrates and vapes, potency data coverage was limited, with fewer than 15-25% of sold packages that could be reliably matched. Due to this limitation, downstream THC estimates for processed products based directly on sales data were not sufficiently robust.

As a result, the analysis pivoted to focus on dispensed flower only (Figure 6). In parallel, we examined transfers of raw flower to processor licensees as an indirect method of estimating the amount of flower entering the processed-goods segment of the market. This approach, which underlies Figure 5, treats transfers to processors as a proxy for the production of non-flower products, even though the specific end products could not be directly identified.

Using transfer data from the track-and-trace system, we selected all shipments of raw flower products (i.e., buds, shake/trim) going to processors (i.e., processors were the receiving party). The transfer data began for processing in 2024, and because it also had associated THC testing, we had 99% coverage among product IDs.

As shown in Figure 5, the amount of THC transferred to processors exhibits meaningful month-to-month variation, with both flower and trim contributing substantially to total processing inputs. Notably, trim and shake account for volumes of THC transferred that are comparable in magnitude to whole flower, reflecting the "melting pot" nature of modern cannabis processing, where multiple raw inputs are aggregated to produce concentrates, vapes, and other manufactured products. Periodic spikes in trim transfers suggest batch-based or inventory-driven processing behavior rather than continuous uniform conversion. However, the transfer of THC to processors is of the same order of magnitude as the amount of THC dispensed, 10^9 mg.

Figure 5. THC (mg[1]) of Flower Transferred per Month to Processors ONLY (July 2023 - November 2025)



Source: MCA Sales Data; Analysis by CPPC

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Demand – Milligrams of THC Dispensed (Sold)

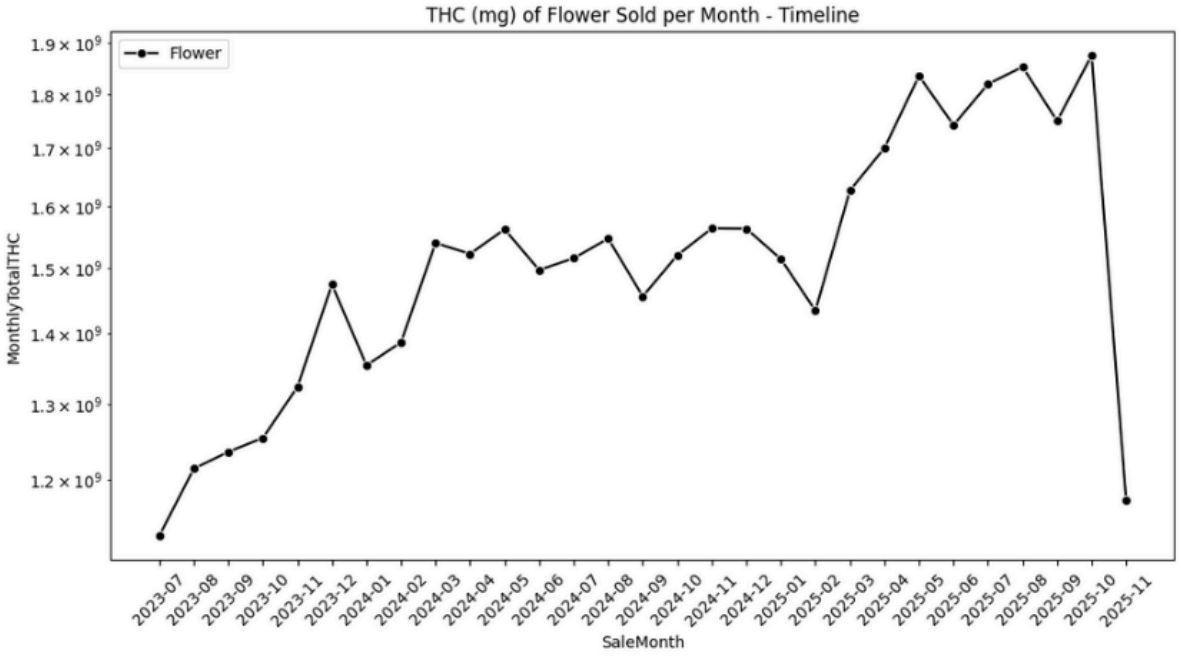
Finally, we examined the amount of THC dispensed (i.e., sold). Using data from the track-and-trace system, we matched lab testing data to the sales transaction reports by package ID. Similar to processing, this resulted in 99% coverage of package IDs connected to lab testing.

As shown in Figure 6, milligrams of THC dispensed through flower sales increased steadily following the launch of adult-use sales, with moderate month-to-month variation and a general upward trend through much of the study period. This pattern suggests sustained and growing consumer demand for flower

[1] Y-axis is in 10^9 mg THC

products, even as the market continued to develop and prices adjusted. The relatively stable trajectory of THC dispensed contrasts with the greater volatility observed earlier in the supply chain, indicating that retail demand for flower has remained comparatively consistent over time. The magnitude of THC dispensed is of 10^9 mg, the same as the amount transferred to processors. Toward the end of the series, the sharp decline observed in the most recent month likely reflects incomplete reporting for the final period rather than a true contraction in demand.

Figure 6. THC (mg) of Flower Sold per Month (July 2023 - November 2025)



Source: MCA Sales Data; Analysis by CPPC

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To contextualize processed-goods demand beyond the figures, we estimated total THC sold in processed products using assumed yield losses during processing. Specifically, we applied conversion ratios of approximately 3.5:1 and 10:1 (raw flower to finished processed product), depending on product type. By comparison, the yield implied by observed transfer data suggests a lower ratio of approximately 2–3:1, indicating that transfer records likely understate the true volume of raw material entering processing.

For this reason, transfer-based estimates should be interpreted as illustrative of trends rather than precise measures of total processed-goods production. Even after inflating processed-goods demand substantially in sensitivity analyses, estimated demand remains roughly an order of magnitude lower than total cultivated supply. This conclusion is reflected in the summary estimates presented in the accompanying Table 2.

The observed trends suggest market movement toward a healthier balance of supply and demand, where regulated sales are slowly catching up to the pace of supply. Licensees appear to be reallocating supply in response to consumer demand, with both flower and processed-goods sales increasing over time. Processed products are capturing a growing share of available THC, reducing excess supply pressure. Assuming no major external shocks, these dynamics are consistent with a market gradually approaching

structural balance.

Supply to Demand Ratio Calculation (Units of mg THC)
Flower processing yield loss estimates range 75-90% on processing parameters, broadly. In other words, anywhere from 4 to 10 grams of flower is input to produce 1 gram of concentrate product. We must caveat that these bounds are *educated* estimates and therefore should be approached with caution.

For a lower-loss bound of 75%, we substituted the 3.54-gram equivalent for 1 gram of concentrate. This is a value used by MCA in calculating flower-equivalent patient purchasing limits with concentrated products. For the upper bound, 90% loss, we took a 10g equivalent for 1g concentrate.

We further accounted for the relative market share of raw flower and processed goods (i.e., approx. 55% to 45%) using proportional weighting and then combined the amounts for flower and processed together for each bound, taking the amount cultivated divided by the total amount dispensed for THC supply-demand analysis.

Table 2 below shows the quarterly averages of the amount of THC, in milligrams, cultivated and dispensed. Overall, we see an amount cultivated on the order of 10^11 THC (mg), whereas the amount dispensed of flower is on the order of 10^9 THC (mg), a 100-fold difference in scale. If we estimate it takes 10 grams of flower to create 1 gram of concentrate product (implying a 90% yield loss), we still have 10^10 THC (mg) of supply imbalance. This corresponds with a supply-demand ratio from 5:1 to 10:1 for 2025.

Table 2. Supply and Demand, Including Estimation of Processed Product Dispensed THC Equivalence (mg)

			Using 3.54:1 Weight ratio of Flower Equivalence			Using 10:1 Weight ratio of Flower Equivalence		
Sales Quarter	Cultivated THC	Dispensed THC - Flower	Estimated Dispensed THC Processed Goods	Sum Dispensed THC	Cultivation-to-Demand Ratio	Estimated Dispensed THC Processed Goods	Sum Dispensed THC	Cultivation-to-Demand Ratio
2023Q3	7.28E+10	1.22E+09	3.54E+09	4.77E+09	15.28	1.00E+10	1.12E+10	6.48
2023Q4	3.44E+11	1.38E+09	4.00E+09	5.38E+09	64	1.13E+10	1.27E+10	27.16
2024Q1	1.69E+11	1.48E+09	4.29E+09	5.77E+09	29.29	1.21E+10	1.36E+10	12.43
2024Q2	1.48E+11	1.58E+09	4.58E+09	6.16E+09	23.98	1.29E+10	1.45E+10	10.18
2024Q3	1.66E+11	1.54E+09	4.47E+09	6.01E+09	27.59	1.26E+10	1.42E+10	11.71
2024Q4	1.29E+11	1.62E+09	4.70E+09	6.32E+09	20.42	1.33E+10	1.49E+10	8.67
2025Q1	1.09E+11	1.61E+09	4.66E+09	6.27E+09	17.35	1.32E+10	1.48E+10	7.36
2025Q2	1.81E+11	1.84E+09	5.34E+09	7.18E+09	25.23	1.51E+10	1.69E+10	10.7
2025Q3	1.07E+11	1.88E+09	5.44E+09	7.32E+09	14.68	1.54E+10	1.72E+10	6.23
2025Q4 *	6.77E+10	1.58E+09	4.57E+09	6.15E+09	11	1.29E+10	1.45E+10	4.67

IV. Cannabis Demand Analysis

Data collected in the RDCOS undergoes numerous steps to ensure data quality, including multiple attention checks, consistency of answers, and standard web-based duplicate and fraudulent response detectors. Additional steps are taken to increase representativeness and ensure the sample closely matches the observed characteristics of the broader past-month cannabis consuming population of Maryland. For this study, data from the 2024 Maryland BRFSS were utilized to generate “pseudo-weights” with weighted multivariate logistic regression in a process known as “Inverse Propensity Weighting” or “Inverse Probability Weighting”. The resulting weights are then “raked” in a process known as “Iterative Proportional Fitting” on

five characteristics: age, gender, race and ethnicity, income, and the number of days an individual has used cannabis within the past month.

The RDCOS collects data on a total of 84 unique product types between cannabis and hemp products. Participants are asked to indicate the total number of units and price paid within the past month from a variety of sources. For cannabis products, a total of eleven sources are included. For hemp products, a total of nine sources are included. In total, there are 774 unique product-source combinations from which we collect data to determine demand. Post-collection data cleaning is utilized to ensure estimates represent the average past-month cannabis consumer in Maryland. This includes winsorization of individual variables and mahalanobis distance to prevent structural, multivariate outliers from distorting the data.

Table 3. Total Average Monthly Cannabis Expenditures by Product Type (All Consumers)

Total Avg Monthly Cannabis Expenditures by Adults and Patients (Total Population)	Retail Expenditures	Flower	Preroll	Edibles	Beverages	Concentrates	Vapes	Tinctures	Topicals	Capsules
$233.48	$175.47	$106.86	$31.08	$34.89	$7.47	$17.53	$31.20	$1.18	$2.48	$0.80

Table 4. Total Average Monthly Cannabis Expenditures by Product Type (Patient and Non-Patient Consumers)

Population	Total Avg Monthly Cannabis Expenditures	Retail Expenditures	Flower	Preroll	Edibles	Beverages	Concentrates	Vapes	Tinctures	Topicals	Capsules
Non-Patient	$198.70	$142.26	97.93	$26.00	$28.78	$5.08	$13.53	$25.16	$0.63	$1.20	$0.40
Patient	$317.91	$256.09	$128.54	$43.44	$49.73	$13.26	$27.22	$45.84	$2.51	$5.60	$1.77

Tables 3 and 4 above present average monthly cannabis expenditures by product type for the total consumer population, as well as a comparison between medical cannabis patients and non-patient adult consumers. Across all consumers, average monthly cannabis spending is approximately $233, with the majority of expenditures occurring through licensed retail channels. Flower accounts for the largest share of total monthly spending, followed by edibles, pre-rolls, vapes, and concentrates, indicating that while flower remains the primary driver of consumer demand, processed products collectively represent a substantial portion of total expenditures.

When broken down between patients and non-patients, medical cannabis patients report higher average monthly expenditures than non-patient consumers across nearly all product categories, with elevated spending on flower, edibles, vapes, and concentrates. These patterns suggest that patients engage in more frequent cannabis consumption and rely on a broader range of product types to meet their specific needs. Non-patient consumers allocate a comparatively smaller share of expenditures to non-flower processed products. Importantly, these findings suggest that medical cannabis patients remain an economically significant consumer segment even following the legalization of adult-use cannabis.

Table 5. Total Average Monthly Cannabis Expenditures by Source (All Consumers)

Total Avg Monthly Cannabis Expenditures by Adults and Patients (Total Population)	Retail	Homegrow	Illicit	Gifted	Purchased from Friends or Family	Caregiver	Medical Out of State	Adult Out of State	Other
$233.48	$175.47	$1.67	$22.00	$6.95	$18.18	$-	$3.14	$6.43	$ -

Table 6. Total Average Monthly Cannabis Expenditures by Source (Patient and Non-Patient Consumers)

Population	Homegrow	Illicit	Gifted from Friends and Family	Purchased from Friends and Family	Caregiver	Medical Out of State	Adult Use Purhcases Out of State	Other
Non-Patient	$0.90	$23.63	$6.70	$18.70	–	$1.40	$5.70	–
Patient	$3.54	$18.03	$7.55	$16.91	$0.01	$7.35	$8.18	–

Table 7. Percent of Total Cannabis Spending by Source (Past-Month Consumers)

	Retail	Homegrow	Illicit	Gifted	Purchased from Friends or Family	Caregiver	Medical Out of State	Adult Out of State	Other
Percent of Monthly Cannabis Expenditures Across Maryland Past-Month Consumers	75%	1%	9%	3%	8%	0%	1%	3%	0%

Tables 5, 6, and 7 summarize past-month consumer-reported cannabis expenditures by source, broken down by the total population and patient status. **Across all consumers, the majority of monthly cannabis spending occurs through licensed retail channels, which account for approximately 75% of total expenditures.** The remaining share of spending is distributed across both illicit and gray/unregulated sources, such as purchases or gifts from friends and family, homegrow, and out-of-state purchases. In dollar terms, these non-retail sources represent relatively small portions of total monthly spending when compared to regulated retail, indicating that the licensed market captures the bulk of consumer expenditures.

Medical cannabis patients report slightly higher spending on homegrown cannabis and out-of-state medical purchases, which suggests at least partial reliance on alternative sources to meet their monthly cannabis needs. Non-patient consumers report marginally higher spending on cannabis obtained from both illicit sources and from friends and family. These findings suggest that while consumers occasionally obtain cannabis through non-retail channels to supplement their monthly purchasing, the regulated market remains the primary source of cannabis for both patients and adult-use consumers**. Alternative non-retail sources appear to function as complementary channels that fill gaps in access, pricing, or availability within an otherwise retail-dominated market.**

Table 8. Average Monthly Cannabis Expenditures by Product Type and Source (Patient and Non-Patient Consumers)

Product Type Expenditures	Population	Total Avg Monthly Expenditures	Licensed Retail (Adult-Use/Medical)	Free/Gifted from Friends and Family	Purchased from Friends and Family	Illicit Source	Took from Homegrow	Out-of-State Medical Dispensary	Out of State Adult Dispensary	Delivery from Licensed Retail (Adult-Use/ Medical)	Unlicensed Retail Store	Other	Delivery from a Registered Caregiver
Flower	Non-Patient	$ 97.93	$62.41	$4.01	$ 11.93	$6.88	$0.33	$0.31	$2.05	$5.67	$4.33	–	–
	Patient	$ 128.54	$83.55	$2.59	$9.16	$ 4.07	$0.94	$2.71	$3.56	$18.36	$3.59	–	–
Pre-Roll	Non-Patient	$ 26.00	$14.70	$0.69	$2.03	$1.29	$0.22	$0.18	$1.25	$3.47	$2.16	–	–
	Patient	$ 43.44	$29.04	$1.22	$1.35	$0.98	$0.70	$1.15	$1.13	$6.38	$1.47	–	–
Edible	Non-Patient	$ 28.78	$18.18	$0.71	$1.82	$2.51	$0.16	$0.34	$0.76	$2.52	$1.77	–	–
	Patient	$ 49.73	$34.88	$1.14	$1.68	$1.01	$0.61	$0.91	$1.59	$5.88	$2.02	–	$0.01
Beverage	Non-Patient	$ 5.08	$2.66	$-	$0.38	$0.06	$0.13	–	$0.02	$1.77	$0.07	–	–
	Patient	$ 13.26	$6.60	$0.86	$0.49	$0.22	$0.48	$0.39	$0.85	$3.08	$0.28	–	$0.01
Concentrate	Non-Patient	$ 13.53	$6.54	$0.06	$1.31	$1.20	$0.05	$0.12	$0.79	$2.75	$0.72	–	–
	Patient	$ 27.22	$18.16	$0.90	$1.73	$0.38	$0.11	$0.90	$0.68	$3.41	$0.94	–	–
Vape	Non-Patient	$ 25.16	$17.80	$0.63	$1.18	$1.29	$0.02	$0.18	$0.75	$2.25	$1.06	–	–
	Patient	$ 45.84	$33.63	$0.44	$1.29	$0.80	$0.49	$1.03	$0.37	$6.18	$1.61	–	–
Tinctures	Non-Patient	$ 0.63	$0.52	$-	$0.02	$0.01	$ -	–	–	$0.08	–	–	–
	Patient	$ 2.51	$1.55	$0.20	$0.07	$0.30	$0.10	–	–	$0.30	–	–	–
Topical	Non-Patient	$ 1.20	$0.65	$ -	$0.01	$0.03	$-	$0.22	$0.08	$0.07	$0.14	–	–
	Patient	$ 5.60	$4.09	$0.23	$0.85	$0.15	$0.12	$0.15	–	–	–	–	–
Capsule	Non-Patient	$ 0.40	$0.21	$ -	$0.01	$0.02	$-	$0.07	–	–	$0.09	–	–
	Patient	$ 1.77	$0.85	$0.21	$ 0.29	$0.19	$-	$0.10	–	$0.13	–	–	–

Table 9. Average Monthly Cannabis Units Obtained by Product Type and Source (Patient and Non-Patient Consumers)

Product Type Units	Population	Total Avg Monthly	Licensed Retail (Adult-Use/ Medical)	Free/Gifted from Friends and Family	Purchased from Friends and Family	Illicit Source	Took from Homegrow	Out-of-State Medical Dispensary	Out of State Adult Dispensary	Delivery from Licensed Retail (Adult-Use/ Medical)	Unlicensed Retail Store	Other	Delivery from a Registered Caregiver
Flower	Non-Patient	18.69	11.41	1.22	2.28	1.6	0.27	0.04	0.18	0.89	0.79	0	0
	Patient	22.88	16.14	0.73	2.14	0.45	0.62	0.26	0.32	1.85	0.37	0	0
Pre-Roll	Non-Patient	4.78	3.04	0.25	0.33	0.23	0.03	0.01	0.13	0.5	0.25	0	0
	Patient	8.26	5.45	0.34	0.17	0.07	0.09	0.13	0.18	1.65	0.18	0	0
Edible	Non-Patient	1.97	0.95	0.19	0.21	0.15	0.02	0.02	0.05	0.25	0.13	0	0
	Patient	3.16	1.91	0.19	0.24	0.05	0.06	0.07	0.13	0.33	0.17	0	0
Beverage	Non-Patient	0.45	0.24	0.03	0.03	0.02	0.02	0	0	0.09	0.01	0	0
	Patient	1.23	0.65	0.08	0.03	0.01	0.04	0.07	0.09	0.21	0.04	0	0
Concentrate	Non-Patient	1.82	0.87	0.07	0.12	0.11	0.01	0.01	0.06	0.5	0.08	0	0
	Patient	2.97	1.5	0.31	0.16	0.05	0.03	0.11	0.07	0.56	0.17	0	0
Vape	Non-Patient	2.36	1.43	0.14	0.1	0.13	0	0.02	0.07	0.23	0.24	0	0
	Patient	3.25	2.16	0.18	0.08	0.06	0.04	0.11	0.03	0.43	0.15	0	0
Tinctures	Non-Patient	0.04	0.02	0.01	0.01	0.01	0	0	0	0	0	0	0
	Patient	0.19	0.13	0.01	0.01	0.01	0.01	0	0	0.02	0	0	0
Topical	Non-Patient	0.09	0.02	0.02	0.01	0.01	0	0.02	0	0	0.01	0	0
	Patient	0.38	0.24	0.02	0.09	0.01	0.02	0.01	0	0	0	0	0
Capsule	Non-Patient	0.09	0.03	0.01	0.01	0.02	0	0	0	0	0.02	0	0
	Patient	0.09	0.05	0.01	0.01	0.01	0	0.01	0	0	0	0	0

Tables 8 and 9 above include the average monthly cannabis expenditures and units obtained by product type and source, broken down by patient status. Across both patients and adult-use consumers, licensed retail outlets are the primary source for nearly all product types in both dollars spent and units obtained, particularly for flower, pre-rolls, edibles, vapes, and concentrates. While consumers do report obtaining cannabis through alternative sources, such as friends and family, illicit purchases, homegrow, or out-of-state sources, these channels account for comparatively small portions of total spending and consumption when compared to regulated retail. These findings indicate that licensed retail outlets are the primary source of cannabis across product categories.

However, noteworthy differences emerge when comparing patients and non-patient consumers. Medical cannabis patients consistently report higher expenditures and higher units obtained across most product types, particularly for flower, edibles, vapes, and concentrates, reflecting more frequent consumption. Patients also report slightly greater purchasing from out-of-state dispensaries, suggesting that some patients might potentially supplement in-state retail access to meet specific product needs. Non-patient consumers, by contrast, indicate lower overall consumption and are more likely to utilize in-state retail outlets for both spending and units obtained. These findings show that while licensed retailers in Maryland successfully capture the majority of consumer demand, medical patients remain a distinct and important consumer group in terms of both how much they purchase and where they obtain cannabis products.

Table 10. Total Average Monthly Expenditures on Hemp-Derived and Alternative Cannabinoids (All Consumers)

Total Avg Monthly Hemp and Alternative Cannabinoid Spending	CBD	Hemp-Derived D9	THCA	D8	D10	THCO	THCP	THCV	CBN	HHC	CBG
$31.50	$5.51	$0.42	$9.85	$10.90	$2.88	$0.12	$0.40	$0.21	$0.49	$ -	$0.72

Table 11. Total Average Monthly Expenditures on Hemp and Alternative Cannabinoids (Patient and Non-Patient Consumers)

Population	CBD	Hemp-Derived D9	THCA	D8	D10	THCO	THCP	THCV	CBN	HHC	CBG
Non-Patient	$5.62	$0.52	$10.83	$10.60	$2.67	$0.13	$0.26	$0.23	$0.18	–	$0.82
Patient	$5.24	$0.17	$7.46	$11.64	$3.38	$0.08	$0.73	$0.17	$1.25	–	$0.47

Tables 10 and 11 summarize consumer-reported monthly expenditures on hemp-derived and alternative cannabinoid products for both the total consumer population and by patient status. On average, consumers report spending approximately $31.50 per month on these products, with the leading cannabinoids being delta-8 THC (D8), THCA, and CBD. Spending on other alternative cannabinoids, such as delta-10 THC (D10), CBN, THCV, and CBG, is comparatively smaller, suggesting that demand in this segment is concentrated within a few well-known cannabinoids. This total reflects roughly 13% of the total monthly average cannabis expenditures.

Spending patterns are relatively similar across patient and non-patient consumers. Patients do, however, report slightly higher spending on certain cannabinoids, namely delta-8 THC, delta-10 THC, THCP, and CBN, while non-patients report slightly higher spending on CBD, hemp-derived delta-9 THC, THCA, THCO, THCV, and CBG.

Importantly, hemp-derived and alternative cannabinoid expenditures represent a relatively modest share of total cannabis spending when compared to regulated cannabis purchases. This pattern suggests that these products are more likely functioning as complements to the regulated cannabis market rather than direct substitutes. Consumers may purchase hemp-derived and alternative cannabinoids to supplement access, seek lower-cost options, or obtain specific products not currently available through licensed channels. While hemp-derived cannabinoids occupy a nontrivial segment of the broader market, they do not appear to meaningfully replace or directly compete with Maryland's regulated cannabis system.

VI. Policy Considerations

Maryland's regulated adult-use cannabis market continues to grow in total sales, with flower and vape products making up the largest share of revenue. At the same time, trends in canopy utilization and THC-based supply-to-demand metrics suggest that current cultivation levels are shaped more by market conditions and operator decisions than by regulatory limits on canopy. Consumer-reported data also indicate that licensed retail captures roughly 75% of monthly cannabis spending, indicating a well-functioning regulated market with strong consumer participation. Alternative cannabis sources, including illicit purchases and hemp-derived THC and alternative cannabinoids, appear to be a limited, supplemental source for consumers rather than a direct substitute for the regulated cannabis market.

Based on this analysis, CPPC offers the following preliminary policy considerations to support continued market stability, improve data quality and collection, and promote greater efficiency and competition across the regulated supply chain.

1. **Maintain existing canopy limits while prioritizing market competition.** Findings from this initial report do not indicate an immediate need for increases to licensed canopy among those currently licensed. Instead, the market would likely benefit more from the entry of new adult-use licensees that increase competitive pressure, expand product availability, and contribute to lower retail prices over time, which may attract additional consumers into the regulated market. Importantly, new entrants across the entire supply chain may encourage increased efficiency from the existing operators.
2. **Modernize the licensing system to capture canopy size and other core license attributes.** At present, information on licensed canopy is collected outside of the track-and-trace or licensing system through self-reported processes that are subjective, inconsistently defined, and not designed to support ongoing regulatory analysis. MCA would benefit from a formal licensing information system that consolidates key license-level data, including canopy square footage, cultivation type, authorized capacity, and other operational licensing characteristics, using standardized definitions and required fields. Improving the completeness and consistency of these data would strengthen regulatory oversight, reduce reliance on ad hoc reporting, and improve the accuracy of future market monitoring, modeling, and forecasting.

Additional policy considerations will be presented in the forthcoming updated report in January.